

REMARKS

By the present Amendment, claim 1 has been amended to recite that the glass transition temperature (Tg1) determined by rigid pendulum viscoelastomer and the glass transition temperature (Tg2) determined by a differential scanning calorimeter are in the range of 110°C to 250°C respectively. Such recitation is at least supported by the last paragraph on page 4 and in particular the 5th line from the bottom of the page. In addition, claim 1 has been amended to recite the substance of claim 2 in a manner which fully addresses the rejection under 35 U.S.C. § 112 set forth in the Action. In particular, amended claim 1 further recites that the difference between the glass transition temperature (Tg1) as determined by a rigid pendulum viscoelastomer and the glass transition temperature (Tg3) thereof calculated from a monomer composition constituting the coating film is 30°C or more and the difference between the glass transition temperature (Tg2) as determined by a differential scanning calorimeter (DSC) and the glass transition temperature (Tg3) thereof calculated from a monomer composition constituting the coating film is 30°C or more. This recitation is supported not only by original claim 2, but by the passage on page 4, lines 10-18. Claim 2 has accordingly been canceled without prejudice or disclaimer and claim 3 has been converted to a dependent claim that depends from claim 1. Finally, new dependent claims 6 and 7 have been added to define additional aspects of the invention that are supported by the specification such as at page 5, lines 12-13 and page 7, lines 13-18.

Before addressing the reasons why the claims now of record are patentable over the cited prior art, applicants believe that a brief discussion of certain aspects of the present invention and the advantages which may be obtained therefrom are in

order. As discussed in greater detail in the specification, one aspect of the present invention relates to a wear-resistant coating film comprising a (meth)acrylic copolymer resin having specific characteristics including the aforementioned glass transition temperatures and the relationships thereof and a wear resistance determined by a Taber abrasion testing method which is 80 times or more. In this latter respect, the Taber abrasion testing method is set forth on page 14 of the specification and involves a wear ring method wherein the number of revolutions is determined until the coating film was shaved or the coating film was removed from the base material. As discussed throughout the specification and particularly in the last paragraph on page 19, the defined wear-resistant coating film can exhibit durability against scratching and wear and can be applied onto metal and plastic materials of vehicles, automobile parts, home appliances, instruments and similar items. The (meth)acrylic copolymer resin defined in claim 4 can provide a coating film having these characteristics as illustrated in the Examples starting on page 14 of the specification.

The advantages which can be obtained in accordance with the claimed coating film can be understood with respect to the Examples set forth in Table 1-1 and the Comparative Examples set forth in Table 1-2 and the test results therefrom provided in Tables 2-1 and 2-2 on page 18. As can be understood by those of ordinary skill in the art, if the coating film does not have the glass transition temperatures (Tg1) and (Tg2) within the range of 110°C to 250°C and/or does not have the difference between (Tg1) and (Tg3), as well as the difference between (Tg2) and (Tg3) of 30°C or more, substantially inferior results occur, particularly with respect to solvent resistance and wear resistance. In this regard, it will be noted

from Table 2-1, that in each of the illustrative Examples (Tg1) and (Tg2) are within the range of 110°C to 250°C and the differences between both (Tg1) and (Tg3) and (Tg2) and (Tg3) are 30°C or more, as recited in claim 1.

With the foregoing background and the claims of record in mind, applicants respectfully submit that the rejections set forth in the Official Action cannot be maintained. As noted above, the substance of claim 2 has been incorporated into claim 1 in a revised manner supported by the specification and the data in the aforementioned Tables and fully addresses the rejection under 35 U.S.C. § 112. Turning to the prior art rejections, the Examiner has initially relied on the combination of Ishigaki et al., U.S. Patent No. 4,822,727, in view of Wang et al., U.S. Patent No. 5,536,627. Ishigaki et al. relates to a silver halide photographic light-sensitive material having a support containing at least one light-sensitive silver halide emulsion layer and at least one light-insensitive upper layer on the emulsion layer in which at least one of the light-insensitive upper layers contains a polymer latex having a glass transition point of at least 20°C. The patent further states that at least one light-insensitive upper layer contains a polymer latex having a glass transition point of lower than 20°C.

The silver halide photographic light-sensitive material of Ishigaki et al. is totally different from the wear-resistant coating film of the present invention which can be used to protect items such as vehicles, automobile parts, home appliances and instruments. The description of a latex polymer having a glass transition point of at least 20°C does not in anyway teach the claimed glass transition temperatures (Tg1) and (Tg2) of 110 to 250°C so that a coating film having good wear resistance can be obtained. Indeed, the further description in the patent that a polymer latex is

present having a glass transition temperature of lower than 20°C would lead away from a contention that the claimed range is met. Moreover, there is absolutely nothing in the patent which in anyway teach the claimed difference between (Tg1) and (Tg3), as well as (Tg2) and (Tg3) of 30°C or more as defined in claim 1. As discussed above, this explicit recitation is important in obtaining a wear-resistant coating as demonstrated in the evidence provided in the previously discussed Tables of the specification. Accordingly, Ishigaki et al. cannot in anyway be used as a basis for rejecting any of the claims of record.

Wang et al. relates to a photographic element comprising a support having a front side and a back side with an image-forming layer on the front side of the support, a protective overcoat on the front side of the support with the protective overcoat being defined. The back side of the support has a protective overcoat layer comprising a hydrophobic material having a defined delta haze. The Examiner has asserted that Wang et al. discloses a photographic element with improved winch scratch resistance and has then maintained that it would have been obvious to employ the Taber abrasion test of Wang et al. to further define the properties of Ishigaki et al.

The asserted combination of prior art relied on by the Examiner is totally inappropriate. All the references to the scratch resistant layer in column 4 and column 6 referred to by the Examiner relate to the hydrophobic topmost **back** side layer and not any layer on the side which contains the image-forming layer. In this regard, it is notable that Wang et al. does not describe Taber abrasion tests with respect to the protective layer on the image-forming side of the support. Therefore, to assert that one would even attempt to apply Taber abrasion tests to the light-

insensitive upper layer that is on top of the light-sensitive silver halide emulsion layer is contrary to the very teachings of the patents. Moreover, simply applying the Taber abrasion tests does not mean that the claimed characteristic is met. In this regard, the Examiner's attention is again directed to the results set forth in the abovementioned Tables of the specification which show that even if certain copolymers are prepared from some of the same monomer components used in the illustrative examples, one does not necessarily meet the claimed glass transition temperatures and/or relationships and the claimed Taber abrasion test. Moreover, the requirements for protecting photographic material is entirely different from the requirements from protecting items such as vehicles, automobile parts, home appliances and other articles that are exposed to the environment. Therefore, not only is the combination of patents totally inappropriate, the combination would still not result in the presently claimed invention with the defined relationship between the recited glass transition temperatures and the specific Taber abrasion test (which is conducted in accordance with the technique described on page 14 and which is substantially different from the cinch abrasion test described in column 7 of Wang et al.) and would certainly not lead to a recognition of the advantageous results that are illustrated in the Tables provided in the specification. Hence, the claims of record are clearly patentable over the combined disclosures of these patents.

Claims 4 and 5 are also patentable, particularly over the teachings of Uchida, U.S. Patent No. 4,692,396, which the Examiner has relied on for an anticipation rejection on pages 5 and 6 of the Action. The Examiner has asserted that Uchida teaches a photopolymerizable resin composition for an aqueous developing type dry film resist which comprises a binder resin comprising a copolymer of methylmethacrylate, methylacrylate and methacrylic acid.

The Examiner's reliance on Uchida fails to consider the specific recitations set forth in claim 4 and claim 5 which depends therefrom. Claim 4 recites a (meth)acrylic copolymer resin having a weight-average molecular weight of 20,000 or more, produced by radical polymerizing (a-1) 4 to 50 wt% (meth)acrylic acid, (a-2) 0.5 to 17 wt% (meth)acrylic acid **amide**, and (b) 35 to 95.5 wt% of a compound having a reactive unsaturated bond other than (a-1) and (a-2).

There is absolutely no teaching in Uchida of using any amount of (meth)acrylic acid amide which is an important ingredient in this aspect of the invention. Thus, since an anticipation rejection requires that each and every element of the claims be fully met, it is without question that the rejection based on Uchida cannot stand.

For all of the reasons set forth above, applicants respectfully submit that the claims of record are patentable in all regards and therefore request reconsideration and allowance of the present application.

Should the Examiner have any questions concerning the subject application, the Examiner is invited to contact the undersigned attorney at the number provided below.

Respectfully submitted,

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